

What is claimed is:

1           1.     A knitted wire mesh element, comprising: a combination of an annealed  
2     soft wire mesh and a hard wire mesh that does not soften at the elevated  
3     temperature of a catalytic converter, the soft wire mesh being present on the outer  
4     surface of the element.

1           2.     The element of claim 1, wherein the soft wire is flat.

1           3.     The element of claim 1, wherein the soft wire is at least as heat  
2     resistant as type 309 stainless steel.

1           4.     The element of claim 1, wherein the soft wire has an oxide coating on its  
2     surface.

1           5.     The element of claim 1, wherein the hard wire is precipitation-hardened.

1           6.     The element of claim 1, wherein the element has a rectilinear geometry,  
2     an elliptical geometry, or a combination thereof.

1           7.     The element of claim 6, wherein the ring has a flange at one edge.

1           8.     The element of claim 6, wherein the ring is has multiple mesh layers.

1           9.     A catalytic converter assembly, comprising: a substrate for a catalytic  
2 converter disposed in a housing and a wire mesh element disposed on the upstream  
3 side of the converter; said wire mesh element comprising a combination of an  
4 annealed soft wire mesh and a hard wire mesh that does not soften at the elevated  
5 temperature of a catalytic converter, the soft wire mesh being present on the outer  
6 surface of the element.

1           10.    The assembly of claim 9, wherein the monolith is elliptical, rectilinear, or  
2 a combination thereof in cross-section, and one wire mesh element is disposed at  
3 each end thereof.

1           11.    The assembly of claim 9, wherein the soft wire is flat.

1           12.    The assembly of claim 10, wherein the soft wire is flat.

1           13.    The assembly of claim 9, wherein the hard wire is precipitation-  
2 hardened stainless steel.

1           14.    The assembly of claim 10, wherein the hard wire is precipitation-  
2 hardened stainless steel.

1           15.    The assembly of claim 11, wherein the hard wire is precipitation-  
2 hardened stainless steel.

- 1           16. A method for making a wire mesh seal element, comprising:
- 2           A. providing a first wire, knitting the first wire into a first wire mesh
- 3                 tube, and annealing the first wire mesh tube;
- 4           B. providing a second wire, knitting the second wire as a second
- 5                 knitted wire mesh tube;
- 6           C. disposing the first wire mesh tube within the second wire mesh
- 7                 tube;
- 8           D. rolling up the tube within a tube structure to produce a ring having
- 9                 the mesh of the first wire on the outside; and
- 10          E. compressing the ring into a desired geometry.

1           17. The method of claim 16, further comprising in step A., prior to knitting,

2           the step of flattening the first wire.

1           18. The method of claim 17, wherein the compressing step is performed in

2           a mold.

1           19. The method of claim 16, wherein the second wire is provided as

2           precipitation-hardened stainless steel.

1           20. The method of claim 16, wherein the second wire mesh is knitted as a

2           tube over the first wire mesh tube.

1           21. The method of claim 16, wherein the tube with a tube structure has

2           opposing ends, and each end is rolled up.

1           22.    The method of claim 16, wherein the rolled up tube within a tube  
2 structure is inverted to place the first wire mesh on the outside.

1           23.    A knitted wire mesh element, made by the process of: providing a first  
2 knitted mesh tube of a soft wire inside of a second knitted mesh tube of a  
3 precipitation-hardened wire; rolling up and inverting the tubes to produce a  
4 multilayered ring; and pressing the ring into a desired geometry.